

TITLE 327 WATER POLLUTION CONTROL BOARD

#97-9(WPCB)

SUMMARY/RESPONSE TO COMMENTS FROM THE SECOND COMMENT PERIOD

The Indiana Department of Environmental Management (IDEM) requested public comment from April 1, 1999, through April 30, 1999, on IDEM's draft rule language. IDEM received comments from the following parties:

American Electric Power (AEP)
Baker Environmental, Inc. (Bak)
Barnes & Thornburg (B&T)
BP Amoco (BPA)
Eli Lilly and Company (Eli)
Hoosier Environmental Council (HEC)
Indiana Chapter, National Solid Waste Management Association (NSWMA)
Indiana Coal Council (ICC)
Indiana Electric Utility, Solid Waste Work Group (IEU)
Indiana Manufacturers Association (IMA)
Indiana Steel Environmental Group (ISEG)
Indianapolis, City of (INDI)
Ispat Inland Inc. (III)
NiSource (NiS)
Mark E. Shere, Attorney, for Bethlehem Steel Corp. (Beth)
U. S. Steel (USS)

Following is a summary of the comments received and IDEM's responses thereto:

Comment: The draft rule seems short sighted for the following reasons: (1) it does not incorporate a preventative approach by requiring a contaminant source to take steps to stop contaminating before the standards are exceeded; (2) the requirements of the ground water protection statute to "select targets for ground water cleanups" and "ban the discharge of effluents into potable water" are not achieved by the rule; (3) the numeric criteria contained in the rule could be used to allow degradation of ground water resources up to the level of the maximum contaminant level (MCL); (4) the rule makes no mention of aquifers (or water-bearing zones) which must be protected if the rule's laudable goal of protecting ground water is to be achieved; and (5) ground water resources not presently being used to supply drinking water may be needed in the future, but the rule through its definition of naturally limited class ground water is not protective of this class of ground water for future possible drinking water use. (HEC)

Response: IDEM believes the establishment of standards with a classification scheme and narrative and numeric criteria will prevent ground water contamination and protect future uses of ground water. The standards provide a framework for Indiana regulatory agencies and programs

to manage the activities they regulate such that ground water receives the appropriate level of protection based on its classification. Note that the legislature changed the ground water protection statute and eliminated “to select targets for ground water cleanups” as a purpose for the standards during this rule development.

Comment: The proposed classification system of the draft rule is relatively simple yet consistent with both natural and human-derived impediments to aquifer use as drinking water. It is appropriate to exclude some aquifer types from regulation as drinking water class aquifers for a variety of exclusion criteria such as total dissolved solids concentration and poor aquifer yield. (USS)

Response: IDEM understands that, for the adequate and appropriate protection of ground water, recognizing the difference in the natural quantity and quality characteristics of ground water is necessary. The use of a classification scheme allows this.

Comment: The rule needs to be revised to reflect the provisions of Senate Engrossed Act 83 regarding how the rule will affect other agencies and House Bill 1919 regarding risk based decision-making being applicable to ground water remediation projects. (IMA, Eli)

Response: Governor O’Bannon signed Senate Engrossed Act 83 and House Bill 1919 after publication of the second notice of the rule. IDEM has revised the rule to reflect the provisions of Senate Engrossed Act 83 and House Bill 1919. Due to these changes, IDEM will issue a third notice on the rule.

Comment: IDEM should further evaluate the draft rule in light of the needs of small to large municipalities and consider its potential effect on (1) the protection of future drinking water supplies; (2) the development or redevelopment of properties in urban areas where pre-existing ground water impacts are evident; and (3) the carrying out of selected municipal activities such as road salt application. (INDI)

Response: IDEM believes the rule provides adequate protection of future drinking water supplies. The rule establishes narrative and numeric criteria for drinking water class water to protect its current and future use as drinking water. Additionally, the rule stipulates that the areas defined as supplying ground water to a community public drinking water supply (wellhead protection areas) not be classified as any class other than drinking water class. Furthermore, IDEM believes that nothing in the rule will prevent the development or redevelopment of properties in urban areas where pre-existing ground water impacts are evident. Separate from this rule, IDEM has programs, e.g., Risk Integrated System of Closure (RISC), Voluntary Remediation Program (VRP), Resource Conservation and Recovery Act (RCRA), that deal with ground water remediation issues, including how to handle the development or redevelopment of properties in urban areas where pre-existing ground water impacts are evident. While it is up to those programs to establish and implement procedures to address those issues, IDEM has included language in the rule to help ensure no interference or conflict with those programs’ ability to do so. For example, IDEM has incorporated an impaired classification to recognize areas with ground water contamination to help facilitate remediation, when appropriate. Additionally, in response to Senate Engrossed Act 83, IDEM has revised the rule to make it clear

that an agency is to develop rules to implement these standards at the facilities they regulate.

Comment: The rule applicability should be expanded to all regulated activities that may contaminate ground water, not just those administered by Indiana agencies, because Indiana does not have primacy for some Federal programs that regulate ground water contamination (such as Class V underground injection wells). Under the Class V UIC regulations, an operator may inject fluids in a wellhead protection area up to the MCL or to a point that would not adversely affect human health. To only require an operator to meet MCLs in the discharge to an aquifer in a wellhead protection area that has no detectable concentration of a constituent with an MCL or other health-based standard is to allow degradation of that aquifer and higher costs for the water utility to treat the water prior to distribution to consumers. (NiS)

Response: The enabling legislation for ground water quality standards, IC 13-18-17-5, limits the applicability to the five agencies listed in the rule. However, IDEM believes that once the Water Pollution Control Board (WPCB) establishes ground water quality standards, other agencies, including the United States Environmental Protection Agency (EPA), may use them in making decisions that may affect ground water quality in Indiana.

Comment: The rule's applicability section cannot achieve the stated goal of protecting ground water if the rule is not applicable to all ground water. Section 2 needs to read: "The standards established in this rule apply to all ground water of the state and activities regulated by the following agencies:". If the rule's applicability were clearly stated that standards apply to all ground water, not just to specific activities, then implementation would be much more straight forward and could be placed at the discretion of the various agencies with more confidence. (HEC)

Response: IDEM believes that the rule does protect all ground water. With the rule, all ground water will be classified and, once classified, protected by the narrative and numeric criteria. Each of the five (5) agencies listed in the rule will establish how it will apply the standards to the activities it regulates.

Comment: The term "activities regulated" used in section 2(a) needs to be described in more detail for each agency so it is clear where the regulations apply and how they will be used. (NiS)

Response: IDEM changed the language in this section to reflect the changes made to the ground water protection statute. Each of the five (5) agencies listed in the rule will establish how it will apply the standards to the activities it regulates. IDEM does not have the statutory authority to specify how other agencies should apply the standards.

Comment: Section 2 concerning applicability of the rule needs to be made more clear with regard to implementation by adding a subsection (d) to mirror IDEM's explanation given in the second notice request for public comments. The following language is suggested to provide clarity: "The ground water standards identified in this rule are not self implementing. A specific activity will become subject to these standards upon the adoption of rules, permit requirements, or other formal implementation of these standards by an agency listed in subsection (a). (IMA, B&T,

Beth, Eli, ISEG)

Response: IDEM has revised the applicability section of the rule to reflect the provisions of Senate Engrossed Act 83 which changed the wording of the enabling legislation for ground water quality standards, IC 13-18-17-5, to say: "...agencies shall adopt rules under IC 4-22-2 to apply the ground water quality standards. . .".

Comment: In order to demonstrate the flexibility of the rule and its usefulness to serve various programs, additional guidance should be provided concerning how the rule will be implemented and interpreted. (INDI)

Response: Each of the five (5) agencies listed in the rule will establish how it will apply the standards to the activities it regulates. With applicability established, the agencies may develop guidance concerning how they will implement and interpret the rule. Individual agencies will decide the necessity for guidance.

Comment: The language of section 2 concerning applicability should remain consistent with statutory authority. (BPA)

Response: IDEM has revised the applicability section of the rule to reflect the provisions of Senate Engrossed Act 83 to remain consistent with the enabling legislation for ground water quality standards, IC 13-18-17-5, which provides the statutory authority for the rule.

Comment: Section 2 (b) merely repeats the five (5) purposes listed in the ground water statute and, by placing them in the rule, adds no clarity but could create confusion potentially causing conflicts with implementing this rule; therefore, they should be deleted. (IEU)

Response: To ensure consistency with the statute, IDEM believes that restating the purposes established by the ground water statute is appropriate. Note that the legislature changed the ground water protection statute and eliminated "to select targets for ground water cleanups" as a purpose for the standards during this rule development.

Comment: A ban on the discharge of effluents into potable ground water, as stated in section 2(b)(3), would effectively stop or lead to additional costs for water control or treatment in association with dewatering activities at a variety of projects where ground water is discharged to and subsequently infiltrates to land overlying a drinking water class aquifer. This restriction should be deleted from the rule. (NiS)

Response: IC 13-18-17-5, which provides the statutory authority for the rule, establishes purposes for the rule including: "To ban the discharge of effluents into potable ground water." As it is a statutory requirement, IDEM believes that restating it as a purpose in the rule is appropriate.

Comment: The Water Pollution Control Board has statutory authority to ban the discharge of effluents to potable water supplies, and to implement this authority, the rule needs to involve more than simply classifying ground water and developing numeric and narrative criteria. An implementation procedure is needed in the rule to provide for the protection of ground water resources. (HEC)

Response: Each of the five (5) agencies listed in the rule will establish implementation procedures for applying the standards to its regulated activities to ensure protection of ground water resources. To be consistent with the statute, these procedures must effectively ban the discharge of effluents to potable water supplies.

Comment: The rule gives decision making authority only to the commissioner of the Indiana Department of Environmental Management (IDEM) but is unclear whether the IDEM commissioner has authority for activities regulated by other state agencies. This should be clarified in the rule. (IEU, NiS)

Response: IDEM has revised the applicability section of the rule to reflect the provisions of Senate Engrossed Act 83 which changed the wording of the enabling legislation for ground water quality standards, IC 13-18-17-5, clarifying that agencies must adopt rules to apply the ground water quality standards. Additionally, IDEM expanded the decision making authority, under the provisions of the rule where it was appropriate, to “an agency” rather than “the commissioner.”

Comment: The rule sets the stage for five (5) different agencies to make judgements in the future about whether and how activities should be controlled to meet the standards. It is important that the new standards do not conflict with ground water cleanup standards that have already been negotiated and, in some cases, are already being implemented under existing corrective action programs. (ISEG)

Response: IDEM made considerable effort to ensure that the standards “fit” with the appropriate remediation programs. IDEM has revised the applicability section of the rule to reflect the provisions of Senate Engrossed Act 83 which changed the wording of the enabling legislation for ground water quality standards, IC 13-18-17-5, and eliminated the purpose: “To select targets for ground water cleanups.” Additionally, language from House Enrolled Act 1919 that revised IC 13-12-3 was incorporated into the rule. The rule now says: “The standards established in this rule shall allow, as appropriate, ground water remediations to be consistent with the remediation objectives set forth in IC 13-25-5-8.5.”. Generally, the appropriate remediation program will establish cleanup numbers. IDEM has included language in the rule to help ensure no interference or conflict with those programs’ ability to do so.

Comment: The definition of “contaminant” should be modified by the removal of the words “or any odor” because odors can be naturally occurring and subjective in detection. (Bak, BPA)

Response: The definition of “contaminant” used in the rule is the statutory definition of “contaminant” found at IC 13-11-2-42; therefore, IDEM does not believe it is appropriate to narrow the definition.

Comment: The definition for “contaminant” should be: “any chemical that is directly introduced into ground water by human activity or that migrates to ground water from areas of human activity.” (NSWMA)

Response: The definition of “contaminant” used in the rule is the statutory definition

found at IC 13-11-2-42; therefore, IDEM does not believe it is appropriate to narrow the definition.

Comment: The definition of “contaminant” is too expansive and could be interpreted to include many substances normally considered innocuous since most substances in sufficient quantity can be injurious to human health and plant or animal life or property. (NiS)

Response: The definition of “contaminant” used in the rule is the statutory definition found at IC 13-11-2-42; therefore, IDEM does not believe it is appropriate to narrow the definition.

Comment: The rule needs a clear definition of what constitutes a contaminant concentration that poses a threat to human health or has no adverse impact to the environment for situations without a drinking water class numeric criterion. (INDI)

Response: The contaminant concentration that poses a threat to human health or has no adverse impact to the environment will vary depending on the contaminant and site involved. To account for this variability and ensure adequate protection, the rule requires a risk analysis be done to establish a numeric criterion for those contaminants that do not have a specific numeric criterion listed in the rule.

Comment: The word “point” in the definition of “contaminant source” should be replaced by “facility” or “activity” to allow the perimeter of standard application to be more accurately drawn with reference to potential contaminant sources that cover a broad area rather than originating at a single point. (IMA, Eli, ISEG)

Response: IDEM included the definition of “contaminant source” in the second notice draft to help define the location of standards application. However, since the concept of the location of standards application was refined and replaced with the establishment of a ground water management zone, which the rule delegates to different regulatory programs, the given definition was not necessary, so IDEM deleted it from the rule.

Comment: The definition of “drinking water well” should not include the reference to “other household uses” as it is not pertinent. (BPA, NiS)

Response: IDEM included the reference to “other household uses” to recognize that people use their drinking water not only for drinking, but for showering, cleaning, watering, etc. and thus, are exposed to their drinking water in ways other than ingestion. However, to capture this concept, IDEM revised the rule to say: “Supplies ground water for human consumption.”.

Comment: A definition should be added to the rule for “effectively isolated” or “effective isolation” that reads as follows: “Effectively isolated” or “effective isolation” means the physical separation of ground water in two (2) different geologic strata by a low-permeable geologic stratum with a minimum thickness of five (5) feet and a maximum average permeability of 1×10^{-7} cm/sec. This definition extends to ground water separated by discontinuities, as for example, by an incised valley. This definition also includes ground water that exists in a geologic stratum that has a maximum average permeability of 1×10^{-7} cm/sec. (NSWMA)

Response: IDEM removed the specific reference to “effective isolation” from the rule.

Comment: The definition of “ground water” should be “water that completely occupies the voids in a geologic stratum. This portion of the geologic stratum is also called the saturated zone. Water that partially occupies the voids in a geologic stratum in combination with air (that is in the unsaturated zone in the geologic stratum) is not included in this definition.” (NSWMA)

Response: IDEM has changed the definition of ground water to: “water located below the ground surface in interconnected voids and pore spaces in the zone of saturation.”

Comment: The definition of “karst” should not be limited to sites with characteristic physiographic features. Add the words “but not limited to” after “or subterranean features including,” and expand the list of features to include joints and underground voids. (HEC)

Response: The term “karst” is no longer used in the rule; therefore, IDEM deleted the definition.

Comment: The definition of “naturally occurring concentration” should not include the language of clause (A) referring to human-made materials such as solid waste, as defined by IC 13-11-2-205, or hazardous waste, as defined by IC 13-11-2-99, but should include slag and foundry sand with the language of existing clause (B). (IMA, Bak, BPA, Eli, ISEG)

Response: IDEM changed the definition of “naturally occurring concentration” to: “a constituent concentration in ground water that is not attributable to human activity.” This definition disallows the consideration as naturally occurring, any contaminant concentration resulting from solid or hazardous waste, slag, foundry sand, or coal mining. IDEM believes that considering solid or hazardous waste, slag, foundry sand, or coal processing waste, as formation material that contributes to a naturally occurring concentration is not appropriate. IDEM believes the rule provides ways to deal with elevated concentration levels in ground water resulting from the past disposal practices of solid or hazardous waste, slag, foundry sand, and coal processing waste. For example, one may classify ground water as impaired class ground water, if appropriate.

Comment: The definition of “naturally occurring concentration” should not limit formation materials to spoils deposited from coal mining activities but should refer in clause (B) of the definition to material that is attributable to coal mining activities regulated under IC 14-34. To limit the definition as the rule presently is worded would make it necessary to attempt to isolate the contaminant concentrations due to spoil from those due to coal processing waste or other materials legally disposed of in the mine excavations. (ICC)

Response: IDEM changed the definition of “naturally occurring concentration” and the definition now precludes the consideration of spoil or any coal processing waste as fill material that may become a formation material after a mining site is closed according to IC 14-34. The agency with jurisdiction over a facility, in this case, the Indiana Department of Natural Resources (IDNR), will determine the appropriate actions to be taken to meet the standards when coal processing waste is disposed of at a mine site.

Comment: The definition of “naturally occurring concentration” should exclude spoils deposited from coal mining activities from formation materials. Mine spoils have been placed in areas that have in the past and could produce drinking water from wells if the ground water were not allowed to be contaminated. (HEC)

Response: IDEM changed the definition of “naturally occurring concentration” and the definition now precludes the consideration of spoil or any coal processing waste as fill material that may become a formation material.

Comment: The reference to 327 IAC 2-1.5 in the definition of “surface water quality standards” should be eliminated. (IMA, Eli, ISEG)

Response: 327 IAC 2-1.5 is the citation for the surface water quality standards applicable to all state waters within the Great Lakes system. Ground water affecting surface water in the Great Lakes system should comply with these standards.

Comment: The current draft rule does not achieve the regulatory goal in the least restrictive manner to minimize expenses to regulated entities as required by IC 4-22-2-19.5. The rule should include the definition of “constituents of concern” that was in a former draft version of the rule and read as follows: “ “Constituents of concern” means those constituents, pursuant to 40 CFR Part 264 Appendix IX, stored or used, now or in the past, by a facility, practice or activity or any constituent determined by the Commissioner to have potential risk to human health.” (AEP, IEU)

Response: The definition of “contaminant” used in the rule is the statutory definition found at IC 13-11-2-42. Each of the five (5) agencies listed in the rule will establish implementation procedures, including the determination of appropriate “contaminants of concern” for the activities it regulates.

Comment: Section 4 concerning ground water classification would enable corporations to buy large blocks of land in southern Indiana and pollute them. (HEC)

Response: The classification system recognizes existing quantity and quality characteristics that may limit the use of some ground water. Each class of water is subject to all the narrative criteria of the rule and most ground water is subject to class specific numeric criteria established to protect the existing and reasonably expected future use of the water.

Comment: The section 4(a) standard for drinking water class ground water would be sufficiently protective if preventative action levels (PALs) were included in the rule. Otherwise, without PALs, it would be useful to have a sole source aquifer category where these provisions apply and cleanups would be required to achieve background levels. (HEC)

Response: The EPA designed the sole source aquifer designation program as a planning tool to allow special consideration of aquifers that supply over half a given population’s drinking water. The program is administered by the EPA who has designated only one (1) Indiana aquifer, the St. Joseph aquifer in Elkhart County, as sole source. Since this designation, Indiana has developed its wellhead protection program that protects the drinking water that supplies community public water systems, including those in Elkhart County. The rule recognizes the

importance of protecting these drinking water supplies and stipulates that wellhead protection areas not be classified as any class other than drinking water class.

Comment: The words “by the commissioner” should be deleted from both section 4(a) and 4(b). In the final words of section 4(a) “according to subsections (b) and (c)” should be substituted with “according to subsections (b) or (c).” The phrase “in the geologic stratum of concern” should be inserted into section 4(b)(1)(A) following “the absence of any drinking water wells.” (NSWMA)

Response: To ensure consistency in classification, a single authority needs to retain oversight of designations. The rule identifies the commissioner of IDEM as the person authorizing ground water classifications.

Comment: Section 4(b)(1)(A) should be modified to clarify if the ground water is being used for drinking water by rewording as follows: “The absence of any drinking water wells within a one (1) mile radius of the facility, practice, or activity within the hydrostratigraphic zone of interest.”. (INDI)

Response: IDEM changed the language of the rule which now says that the commissioner may classify ground water as naturally limited or impaired if it is “not currently used nor reasonably expected to be used for drinking water in the future.” The person requesting the naturally limited or impaired classification must provide appropriate information to show that the ground water is not used for drinking water. What information is appropriate is site-specific; therefore, IDEM was not prescriptive in the requirements for the demonstration.

Comment: Sections 4(b) and 4(c) should be reworded by exchanging “may” with “shall” to avoid implying that the commissioner's approval must be obtained before ground water can be classified as naturally limited or impacted drinking water class ground water. (NiS)

Response: The intent of the rule is to make the commissioner's approval a requirement for a ground water classification other than the default drinking water class and ground water that automatically qualifies as naturally limited. This requirement should help ensure consistency and fairness in classification.

Comment: In classifying ground water as naturally limited class ground water due to its “effective isolation of the ground water from drinking water class ground water” as provided by section 4(b)(1)(B), no guidance is given on how to make the determination of effective isolation. The rule needs a determinable standard such as hydrogeological concepts of hydraulic conductivity, time of travel, and formation structure to ascertain effective isolation. (BPA, IEU, NiS, INDI)

Response: IDEM removed the specific reference to “effective isolation” from the rule. However, IDEM has captured the concept in the language of the rule by changing it to say that the commissioner may classify ground water as naturally limited or impaired if it is “not currently used nor reasonably expected to be used for drinking water in the future.” The person requesting the naturally limited or impaired classification must provide appropriate information to show that the ground water is not used for drinking water. What information is appropriate is site-specific;

therefore, IDEM was not prescriptive in the requirements for the demonstration.

Comment: The language of section 4(b) is overly restrictive by requiring an aquifer to be both isolated from use and unsuitable for use to qualify for the naturally limited classification. It should be sufficient to show that the aquifer is naturally limited if it meets just one (1) of the listed requirements. To relax the language of section 4(b) would not be inconsistent with section 5(c) or section 7(c), both of which have performance standards for the protection of ground water and human health. (USS)

Response: IDEM believes that ground water generally recognized as being unsuitable for drinking water does not ensure that it is not or will not be used for drinking water purposes. In portions of the state, where large quantities of high quality water are not easily accessible, lower quality water is used as drinking water.

Comment: The two hundred (200) gallon per day (gpd) potential yield stated in section 4(b)(3)(A) is not reasonable or workable. (IMA, Eli)

Response: IDEM took the two hundred (200) gallon per day potential yield from an EPA guidance describing the average daily water use at a single family home.

Comment: It is short sighted to base naturally limited class drinking water on a limited ability to supply water. Low yielding aquifers are often used in combination with other low yielding aquifers to supply household uses, and to allow them to be contaminated is to deny their usefulness. (HEC)

Response: The classification is set up so ground water used for drinking water, including “the combined use of multiple low yield water bearing zones,” cannot be classified as naturally limited.

Comment: In addition to yield and naturally occurring total dissolved solids as the only criteria by which ground water could be classified as naturally limited as provided by section 4 (b)(3)(A) and 4 (b)(3)(B), the rule should include other possible natural conditions, such as depth, location, or the concentration of a naturally occurring constituent, that could cause ground water not to meet drinking water quality. (BPA)

Response: Some activity based, automatic qualifications for naturally limited were added to the rule. For example, ground water is automatically classified as naturally limited if it is in the injection zone of a permitted Class I, II, or III injection well. Other than those automatic qualifiers, IDEM believes that allowing a naturally limited classification based on the depth or location would preclude the development of drinking water supplies that will become viable (considering changing technology and the growing water supply needs of the citizens of the state) in the future. When a naturally occurring constituent concentration exists in ground water above the established health protective numeric criterion, the naturally occurring constituent concentration becomes the numeric criterion applied to that ground water.

Comment: The criterion for total dissolved solids (TDS) is set, in table 6(b), at five hundred (500) milligrams per liter; however, the criterion for a naturally limited class ground

water, described by section 4(b)(3)(B), is set at three thousand (3,000) milligrams per liter. If the EPA secondary maximum contaminant level of five hundred (500) milligrams per liter is to be maintained as a criterion the definition for a naturally limited class ground water should be set at greater than five hundred (500) milligrams per liter total dissolved solids. (USS)

Response: IDEM changed the TDS qualification criterion for a naturally limited class ground water to ten thousand (10,000) milligrams per liter to recognize the EPA's definition of an underground source of drinking water. The concentration of five hundred (500) mg/l TDS is now a criterion that applies as a health protective goal for drinking water wells. In drinking water class water that is not in a drinking water well, the rule applies the concentration of five hundred (500) mg/l TDS as an indicator level. IDEM believes applying the concentration of five hundred (500) mg/l TDS in this way is appropriate to maintain the ground water for use as drinking water. IDEM does not believe that classifying ground water within the range of five hundred (500) mg/l TDS and ten thousand (10,000) mg/l TDS as naturally limited is appropriate because ground water within the range of five hundred (500) mg/l TDS and ten thousand (10,000) mg/l TDS can be treated for drinking water use.

Comment: The classification scheme to define naturally limited water as that having greater than three thousand (3000) milligrams per liter of total dissolved solids is short sighted in that it would allow contamination of water supplies that may be needed in the future and could be used as drinking water because, with technology that is currently available and getting cheaper all the time, water with such levels of dissolved solids can be cleaned up to drinking water specifications. The standard of the rule for naturally limited class ground water should read: "Ground water should be classified as naturally limited class ground water only if total dissolved solids exceed ten thousand (10,000) milligrams per liter.". If yield remains a condition of the rule for specifying naturally limited class ground water, then the conditions for pumping one hundred fifty (150) gpd must be specified; otherwise, unscrupulous individuals will demonstrate that ground water is naturally limited due to low yields by using unreasonable assumptions, such as sampling only a very thin aquifer or using a small diameter well or equivalent modeling assumptions that could lead to declaring a ground water supply naturally limited when in fact it is quite useful. Also, a laboratory test for hydraulic conductivity should not be sufficient to classify an aquifer as naturally limited as such tests routinely show hydraulic conductivity to be ten (10) to one thousand (1000) fold lower than field tests. (HEC)

Response: IDEM changed the TDS qualification criterion for a naturally limited class ground water to ten thousand (10,000) milligrams per liter to recognize EPA's definition of an underground source of drinking water. Additionally, the rule establishes five hundred (500) mg/l TDS as a health protective goal for ground water in drinking water wells, and an indicator for all drinking water class water. If necessary, IDEM will develop separate guidance for defining an adequate and appropriate demonstration of a yield less than two hundred (200) gpd.

Comment: The impacted drinking water ground water classification of section 4(c) is an appropriate response to issues that currently exist in Indiana and that are likely to persist in the future. The protections defined in this subsection (c) are protective and reasonable. (USS)

Response: IDEM believes that including an impaired (formerly known as impacted) class

is appropriate to address the issues of existing contamination in Indiana that is likely to persist in the future.

Comment: The language of section 4(c) concerning ground water not meeting the criteria for naturally limited class ground water includes a limiting factor “if humans are not exposed to it” which should be replaced with “if humans do not ingest it” in order to avoid an absolute standard that could unnecessarily limit insignificant dermal contact that might not pose a health based risk. (IMA, BPA, Eli, ISEG)

Response: IDEM moved and incorporated this concept into the goal of the rule which says: “The goal of this rule is to maintain and protect the quality of Indiana’s ground water to ensure that exposure to the ground water will not pose a threat to human health, any natural resource, or the environment.”. This language ensures consideration of any threatening exposure, whether it is through ingestion, inhalation, or dermal contact.

Comment: In the case of an industrial site or a site under remediation, it does not make sense to prohibit the classification from being impacted because humans are exposed to it as the language of section 4(c) requires. The language of section 4(b)(1) should be substituted for the requirement that humans not be exposed to the ground water as the first criteria for classification as impacted class ground water. An additional condition for classifying ground water as impacted class ground water should include: ground water, unsuitable for use as drinking water because of irreversible man-induced conditions that came into existence prior to July 1, 1999. (III)

Response: The commissioner classifies ground water as impaired (formerly known as impacted) based on many factors not just that it is contaminated. IDEM believes that preventing exposure to contaminated ground water is important. IDEM changed the qualifications for an impaired classification to specifically address ingestion exposure and to allow the commissioner to classify ground water as impaired if it is not currently used nor reasonably expected to be used for drinking water in the future unless it is treated to remove the contamination. To help prevent exposure to contaminated ground water through pathways other than ingestion, the goal of the rule now says: “The goal of this rule is to maintain and protect the quality of Indiana’s ground water to ensure that exposure to the ground water will not pose a threat to human health, any natural resource, or the environment.”. This language ensures consideration of any threatening exposure, whether it is through ingestion, inhalation, or dermal contact.

Comment: The term “impacted drinking water class ground water” used in section 4(c) is confusing since impacted ground water is prohibited for use as drinking water. The term should be substituted with “impacted ground water”, and the rule should address how impacted ground water can be reclassified as drinking water if required remedial activities or natural attenuation ultimately restore impacted ground water to drinking water class ground water. (BPA, III)

Response: IDEM used the term “impaired (formerly “impacted”) drinking water class ground water” to recognize that the water in this class was, in the past, drinking water class quality and may, in the future, return to drinking water class quality.

Comment: The term “impacted drinking water class ground water” used in section 4(c)

should be called “contaminated drinking water so the citizens of Indiana can understand the regulation. It would be useful to have a “historically contaminated drinking water class and a class for ground water that has been “recently contaminated with cleanup required” because these should have different cleanup requirements. Contamination that takes place now should be cleaned up to background levels; for historical contamination, it may be appropriate to seek closure without cleanup. (HEC)

Response: IDEM used the term “impaired (formerly “impacted”) drinking water class ground water” to recognize that the water in this class was, in the past, drinking water class quality and may, in the future, return to drinking water class quality. The number and type of classes of ground water and their qualifiers were determined based on many discussions with many stakeholders. IDEM believes that the three (3) classes established in the rule are adequate to address the ground water quality issues that exist in Indiana.

Comment: The words “or coal combustion byproducts” should be added to section 4(c)(1)(A) after “slag and foundry sands.” (IEU)

Response: IDEM rewrote section 4(c) to address several concerns. Historical contamination not caused by the unlawful action of the person seeking the impaired drinking water classification may not prohibit receiving the classification if the other conditions of the class are met.

Comment: The language of section 4(c)(2)(A) should be changed from “Managed in compliance with applicable remediation laws.” to “Managed in compliance with remediation laws, if applicable.”. (IMA, BPA, Eli)

Response: IDEM rewrote section 4(c) to address several concerns. IDEM removed the language: “Managed in compliance with applicable remediation laws.”.

Comment: The language of section 4(c)(2)(A) should be deleted from the rule because it is both too vague and too prescriptive. There are too many laws that can apply, and it directs activities by other agencies contrary to IDEM's stance that implementation decisions are the responsibility of the regulatory programs. (IEU)

Response: The language of section 4(c)(2)(A): “Managed in compliance with applicable remediation laws.” was removed.

Comment: A new subsection (d) should be added to section 4 to read as follows: “Ground water in a formation being used as part of a permitted, Class I underground injection activity is not classified for purposes of this rule.”. (IMA, Bak, Beth, Eli, ISEG)

Response: IDEM understands that the EPA rigorously regulates injection activity and, therefore, believes that a recognition of this fact in the rule language is appropriate. Ground water in a permitted Class I well injection zone now automatically qualifies for a naturally limited classification.

Comment: While in support of the draft rule's three (3) ground water classifications, additional classifications would not be useful and likely make the rule overly complicated.

However, the rule should include reference to the Voluntary Remediation Program (VRP), particularly, section 8.5 thereof to provide guidance regarding the criteria to be used in making classification decisions. The impacted drinking water class ground water is not consistent with the VRP statute or with true risk-based decision making required by the VRP statute. The question should not be whether the ground water has already been impacted but rather what should be a rational exposure scenario. What is really needed is the opportunity to establish a commercial/industrial classification scheme not based on whether ground water is impacted, but on the current or reasonably foreseeable land use and environmental exposure for that area. The ground water rule should change the impacted class to a commercial/industrial class and follow the science of risk and evolving guidance (including EPA guidance on evaluating future land uses) to be consistent with RISC, with the science of risk, and with existing law. (B&T)

Response: IDEM has designed the classification system to classify ground water to ensure ground water quality is maintained and protected. IDEM does not believe that this rule is the appropriate place to establish land use qualifications. The relationship between land use and ground water quality is not clear. To provide consistency with the VRP statute, the rule now says: “The standards established in this rule shall allow, as appropriate, ground water remediations to be consistent with the remediation objectives set forth in IC 13-25-5-8.5.”. Generally, cleanup numbers will be established by the appropriate remediation program. IDEM has included language in the rule to help ensure no interference or conflict with those programs’ ability to do so.

Comment: Section 5(b) constitutes an extremely strict antidegradation rule. As written, at a minimum, no element or elemental compound can be discharged to the ground water in concentrations greater than those that are already present. The following replacement language is suggested: “Existing ground water quality, as it relates to the parameters listed under 327 IAC 2-11-6(a) and 327 IAC 2-11-6(b) and parameters that pose a threat to human health, shall, at a minimum, be maintained to protect the existing uses.” (IEU, ISEG)

Response: IDEM believes that, although this narrative is an antidegradation criterion, it does not prohibit every discharge to ground water. The prohibition is only to those discharges that eliminate a viable use of ground water. IDEM believes that the classification plan helps define a viable use of ground water.

Comment: Section 5(b) should be worded so that ground water quality is maintained and protected based on its existing use. (NiS)

Response: IDEM believes that limiting the maintenance and protection of ground water quality based only on its existing use will allow the degradation of the resource thereby diminishing its viability for future use. IDEM believes that this would not be appropriate.

Comment: It is not sufficient for the rule to protect existing uses of ground water. A rule requirement to protect ground water uses without the inclusion of PALs and clear applicability is meaningless because it will be unenforceable. Section 5(b), as worded, would allow degradation of ground water quality to the point of meeting the maximum contaminant level. Rule language to protect existing and potential future uses might be sufficient if applicability were defined to

include all potable waters and if preventative action levels were specified and enforced. (HEC)

Response: The rule includes the narrative criterion that “ground water quality shall be maintained, at a minimum, to protect the existing and reasonably expected future use of the ground water.”. Additionally, the rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water aquifers.

Comment: The language of section 5(c) should be reworded to emphasize the goal of protecting residential systems and the basic guideline to not exceed the health-based criteria of section 6. The suggested rewording would read as follows: “Ground water shall be maintained and protected to ensure that contaminant concentrations in a residential drinking water well that has contaminant concentrations less than the numeric criteria established in section 6 of this rule for drinking water class ground water shall not exceed the criteria established in section 6.”. (IMA, Eli, ISEG)

Response: IDEM changed the language to: “Ground water shall be maintained and protected to ensure that a contaminant concentration attributable to human activity does not increase in a drinking water well.”. IDEM believes applying a non-degradation approach to ground water used as drinking water is appropriate. Allowing degradation up to the numeric criteria shifts the burden of maintaining and protecting the ground water from those that may contaminate, to those that use the water. IDEM believes such an allowance is inappropriate.

Comment: Section 5(c) needs to take into consideration the variability of ground water. A moving average or appropriate statistical test should be used to determine if contamination is occurring. (IEU)

Response: IDEM agrees and anticipates that, as an agency establishes how it will implement these standards through rules, it will take into consideration the variability of ground water.

Comment: The antidegradation language included in section 5(c) should be eliminated in favor of limiting contaminant concentrations to the criteria contained in Tables 6(a) and 6(b). (Bak)

Response: IDEM believes applying a non-degradation approach to ground water used as drinking water is appropriate. Allowing degradation up to the numeric criteria shifts the burden of maintaining and protecting the ground water from those that may contaminate to those that use the water. IDEM believes such an allowance is inappropriate.

Comment: Guidance or other language should be added to section 5(c) to discern a relative difference between natural ground water variation and contamination. As well, the

narrative criteria of section 5(c) should not be equally applied for primary and secondary maximum contaminant levels (MCLs), numeric standards of sections 6 and 7. (NiS)

Response: IDEM agrees and anticipates that, as an agency establishes how it will implement these standards through rules, it will take into consideration differences between natural ground water variation and contamination. IDEM believes that using EPA secondary MCLs as health protective goals is appropriate for ground water in drinking water wells. IDEM changed the rule to use the EPA secondary MCLs as indicators in drinking water class ground water that is not in a drinking water well.

Comment: Sections 5(d) and 7(c)(3) both refer to meeting standards in the surface water at the ground water—surface water interface, but neither includes a provision for mixing zones. Without mixing zones, some situations would require remediation where there is no significant impact to the environment. Furthermore, the wording of the sections seem to require remediation of natural concentrations of compounds if they exceed the surface water standards, but no indication is given of what surface water quality standards should be used in the comparison. (NiS)

Response: IDEM believes that the language neither allows nor disallows the mixing zone concept. The surface water standards must be met as determined by IDEM's surface water program.

Comment: It is appropriate under many circumstances to allow for dilution of ground water into surface water prior to application of the surface water quality standards. Such dilution is consistent with long-standing precedent at hazardous waste sites as well as in wastewater permitting and is often the most appropriate approach given the technical basis of the surface water quality standard and risk assessment exposure scenarios. In addition, most federal and state risk assessment guidance provides for the use of fate and transport analyses in such situations in the more detailed tiers of site evaluation. (USS)

Response: IDEM believes that the language neither allows nor disallows for dilution. The surface water standards must be met as determined by IDEM's surface water program.

Comment: The rule should not include any additional provisions regarding degradation/antidegradation because an antidegradation policy in the rule would be inconsistent with governing law that requires risk-based decision making. The question is not whether a contaminant plume is expanding but rather if the expanding plume presents a current or reasonably foreseeable future risk to human health or the environment. Without such risk, current Indiana law does not allow the state to require that the plume be cleaned up or its movement arrested. (B&T)

Response: IDEM believes applying a non-degradation approach to ground water used as drinking water is appropriate. Allowing degradation up to the numeric criteria shifts the burden of maintaining and protecting the ground water from those that may contaminate to those that use the water. IDEM believes such an allowance is inappropriate. IDEM believes that establishing risk of exposure to an expanding plume is difficult. Considering this, IDEM believes it appropriate to require the stabilization of a plume before risk is evaluated. Language was added

to the rule to allow a risk-based approach when appropriate.

Comment: The language in the rule against degradation of ground water quality is inadequate; without PALs, the rule almost encourages contamination. Regarding the language of section 5(c), relying on a prohibition that contaminant level in a drinking water well cannot be increased above background will likely result in contamination of an entire aquifer by the time the contaminant reaches a well. The focus must be on preventing contamination long before it reaches drinking water wells. (HEC)

Response: The rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water aquifers.

Comment: Section 5(e) concerning water in a karst area determined to be surface water needs to take into account that springs and wells serve household uses in karst areas, and since surface water and ground water are so intimately connected in karst regions, the water quality standard in karst areas should be whichever is more stringent between the surface or ground water standards. (HEC)

Response: Language was added to the rule to clarify that both ground water and surface water standards apply in such water as designated by the commissioner.

Comment: The use of primary maximum contaminant levels (MCLs) and selected secondary MCLs in section 6 as numeric criteria does not take into proper consideration the development of these standards nor the inherent variability in background concentrations of substances in ground water which necessitate the reasonable use of average concentrations in setting enforceable ground water standards. Risk-based analyses are appropriate to use as remediation standards for drinking water class ground water. (IEU)

Response: IDEM believes that the MCLs are the appropriate numeric criteria for drinking water class water. EPA maximum contaminant levels are generally accepted for use nationwide in several applications, as the levels have been set based on peer-reviewed scientific data and intensive technological evaluation. EPA, when setting the levels, considers many factors including: the chemical’s occurrence in the environment, likelihood of exposure to the chemical, risk of adverse health effects when exposed to the chemical, methods of detection for the chemical, and the impacts of regulating the chemical on water systems, the economy, and the public health. EPA takes public comment throughout the MCL establishment process. Use of the MCLs provides consistency among the regulatory programs of other states and with the existing regulation of public drinking water supplies.

Comment: Reliance on widely-applicable standards such as the EPA maximum

contaminant levels is sensible for several reasons, including that these standards have been in wide application nationwide and have been the subject of extensive review and comment and their use provides consistency with the programs of other states and with the existing regulation of public drinking water supplies. (USS)

Response: IDEM agrees.

Comment: The numeric criteria of section 6 for drinking water class ground water should be background levels, and the cleanup of ground water resources should be to maximum contaminant level goals (MCLG). Numeric criteria based on human health risks should not be viewed as a level of acceptable contamination. The only purpose in developing numeric criteria based on human health risk should be for use in cleanups. (HEC)

Response: IDEM believes that the MCLs are the appropriate numeric criteria for drinking water class water.

Comment: In Table 6(a)(1), the contaminant “gross alpha particle activity” should be followed by “(including radium 226 but excluding radon & uranium)” to be consistent with drinking water regulation 327 IAC 8-2-9. (IEU)

Response: IDEM agrees, and this change was made.

Comment: The note at the end of Table 6(a)(2) is not necessary since there are no contaminants in the table without a chemical abstract service number. (IEU)

Response: IDEM agrees, and this change was made.

Comment: Section 6(b) should not be worded so that secondary contaminants are given limits that cannot be exceeded because they are not of equal status with primary standards for which EPA has issued binding maximum contaminant levels (MCLs). (IMA, Beth, Eli, ISEG)

Response: IDEM believes that the use of EPA secondary MCLs as health protective goals is appropriate for ground water in drinking water wells. IDEM changed the rule to use EPA secondary MCLs as indicators in drinking water class ground water that is not in a drinking water well.

Comment: Secondary MCLs should not be used as criteria but should instead be used as indicator parameters that may require action if they are increasing or are exceeded. (III)

Response: IDEM believes that the use of EPA secondary MCLs as health protective goals is appropriate for ground water in a drinking water well. IDEM changed the rule to use EPA secondary MCLs as indicators in drinking water class ground water that is not in a drinking water well.

Comment: Criteria for lead and ammonia should be removed from section 6(a) and placed in section 6(b) as secondary contaminants. (IMA, Beth, Bak, Eli, ISEG)

Response: IDEM removed the ammonia criterion from the rule. Although there is no established MCL for ammonia, IDEM initially included it because of concern over its conversion to nitrate. However, since the rule includes the established MCL for nitrate, IDEM believes the

rule adequately addresses this concern. IDEM retained the lead criterion.

Comment: The criteria for lead is too conservative and regulated entities will be required to control lead at a level lower than what is required to protect human health. The ground water criterion for lead of fifteen one-thousandths (0.015) milligrams per liter (mg/l) may be appropriate only if the criterion is applied at a well used for human consumption and only if a statistical approach is used to allow some exceedences as would be consistent with the current National Primary Drinking Water Standards. A ground water criterion for lead of five one-thousandths (0.0050) mg/l should be applied at all other points to protect the ground water as would be consistent with current waste regulations. (AEP, IEU)

Response: IDEM believes that lead is a serious health threat to children; therefore, IDEM retained the lead criterion of fifteen one-thousandths (0.015) mg/l.

Comment: It is appropriate that the rule contain an enforceable lead standard to meet the ground water protection statute requirement to establish health protection goals. (HEC)

Response: IDEM believes that lead is a serious health threat to children; therefore, IDEM retained the lead criterion.

Comment: There should be no limit in the rule for ammonia because there is no ammonia MCL established. As well, EPA has no MCL for lead, only an action level developed in guidance without due process protections. The rule must not be allowed to make this non-legal lead limit a requirement. (B&T, IEU)

Response: IDEM removed the ammonia criterion from the rule. IDEM believes that lead is a serious health threat to children; therefore, IDEM retained the lead criterion.

Comment: Secondary maximum contaminant levels (MCLs) listed in Table 6(b) are federal non-enforceable guidelines for the states for contaminants that may cause cosmetic or aesthetic effects. EPA proposed new regulations for sulfate in 1994 but has since concluded that sulfate is a relatively low risk contaminant and suspended further regulatory activity. The 1996 Amendments to the Safe Drinking Water Act require a study concerning sulfate risk to be completed by August 6, 2001. The criterion for sulfate should be deleted from the ground water rule until there is resolution of the national level activity. (IEU)

Response: IDEM believes that the use of EPA secondary MCLs as health protective goals is appropriate for ground water in a drinking water well. IDEM changed the rule to use EPA secondary MCLs as indicators in drinking water class ground water that is not in a drinking water well.

Comment: The application of secondary maximum contaminant limits (MCL's) listed in section 6(b) will impact particularly on governmental units charged with using and storing salt for the removal of ice from streets. Most of the shallow ground water along many thoroughfares may currently not meet the chloride standard. The draft rule, by making a requirement of secondary maximum contaminant limits, is transforming what now is an unenforceable federal government regulation into a fully applicable numeric standard, but before this occurs, additional data

evaluation of existing chloride concentration in the vicinity of roads, streets, and highways must be undertaken to determine the impact of the rule on municipal salting operations and properties housing salt storage facilities. (INDI)

Response: IDEM believes that the use of EPA secondary MCLs as health protective goals is appropriate for ground water in a drinking water well. IDEM changed the rule to use EPA secondary MCLs as indicators in drinking water class ground water that is not in a drinking water well.

Comment: References to section 6(b) secondary contaminant criteria should be removed from section 7 concerning naturally limited class ground water. (IMA, Eli, ISEG)

Response: IDEM agrees, and this change was made.

Comment: The draft rule is too broad with respect to contaminants that are required to undergo a human health risk analysis according to 327 IAC 2-11-6(c), and regulated entities will be required to perform expensive risk analyses with little or no benefit. (AEP, IEU)

Response: This provision has been reworded to no longer require a risk analysis to be performed for every contaminant.

Comment: The intent of section 6(c) is appropriate to allow the development of ground water quality criteria for constituents not currently covered by MCLs using risk assessment. The draft rule should be modified to note that the focus of any human health risk assessment should be those risk assessment pathways included in the development of the MCLs (for example, drinking water and exposure to water through domestic use). Since sections 6(a) and 6(b) note that the criteria are based on EPA calculations, similar calculation methods should serve as the basis for developing criteria for chemicals without MCLs. The reference in section 6(c)(2) to appropriate toxicological data for ingestion and inhalation should reiterate that the focus is the drinking water pathway. (USS)

Response: IDEM changed the rule language to simply say “appropriate toxicological data”; however, EPA calculations of MCLs consider exposure from ingestion and inhalation.

Comment: The language of section 6(c)(2) concerning “inhalation” is inconsistent with the MCLs of the federal EPA Safe Drinking Water Act. (IMA, Eli, ISEG)

Response: IDEM changed the rule language to simply say “appropriate toxicological data”; however, EPA calculations of MCLs consider exposure from ingestion and inhalation.

Comment: The language of section 6(c)(2) should limit the human health risk analysis to ingestion and not inhalation. (BPA, IEU)

Response: IDEM changed the rule language to simply say “appropriate toxicological data”; however, EPA calculations of MCLs consider exposure from ingestion and inhalation.

Comment: The language of section 6(c)(2) should include toxicological data based on dermal absorption. (HEC)

Response: IDEM changed the rule language to simply say “appropriate toxicological

data”; therefore, exposure through dermal absorption should be considered in the risk analysis.

Comment: The rule, as with the National Pollutant Discharge Elimination System (NPDES) rules, should allow the use of Best Professional Judgement (BPJ) in determining reasonable potential for a substance to be a health risk. As written, the ground water rule directs a state permit writer to require a human health risk analysis to determine a numeric criterion for each and every industrial waste stream and constituent for which there is no numeric criterion in section 6 of the rule. This level of investigation does not make sense as there are so many substances discharged daily from commercial and industrial sources, including janitorial supplies, that are so benign it should be intuitive that there is no risk to human health. Yet, this proposed rule would require a human risk analysis of these substances. (AEP, IEU)

Response: The provision concerning the establishment of criteria based on a human health risk analysis has been reworded to no longer require a risk analysis to be performed for every contaminant.

Comment: The requirement of section 6(d) should be based upon a site specific analysis using ingestion to determine if the naturally occurring concentration is protective of human health. (BPA)

Response: IDEM has changed the rule to say that the numeric criteria are health protective goals. IDEM believes these goals should be considered when ground water is used for human consumption, even when an existing concentration is naturally occurring.

Comment: Section 6(d), in establishing the naturally occurring concentration as the standard when a contaminant is naturally occurring at a level greater than the MCL, is inconsistent with the idea of setting the standard at the MCL when the naturally occurring concentration is lower than the standard. The background concentration should be the standard for all drinking water class ground water. (HEC)

Response: IDEM has changed the rule to say that the numeric criteria are health protective goals. IDEM believes these goals should be considered when ground water is used for human consumption, even when an existing concentration is naturally occurring.

Comment: Section 6(d) properly accounts for the real potential that naturally occurring concentrations of chemicals may exceed drinking water numeric criteria, and it is appropriate to adjust the ground water quality standards to reflect these circumstances. Inclusion of guidance on the mechanism for establishing such naturally occurring concentration would be helpful. The draft rule should also include explicit mention and consideration for the potential that ground water at properties down gradient of contaminant sources should have relief from drinking water based ground water quality standards when the contamination stems from the actions of other parties at upgradient sources. (USS)

Response: IDEM has changed the rule to say that the numeric criteria are health protective goals. IDEM believes these goals should be considered when ground water is used for human consumption, even when an existing concentration is naturally occurring. The regulatory program, when implementing the standards through its rules, may establish guidance for

determining the naturally occurring concentration.

Comment: The numeric criteria of section 6 and 7 have no associated laboratory analytical methods listed in the rule. Uniform analytical laboratory methods should be stipulated so that the detection levels are the same and will provide useful data. (NiS)

Response: To accommodate the variable methodologies used by differing regulatory programs and agencies, the laboratory analytical methods are not specified in the rule. It will be the responsibility of the regulatory program applying the numeric criterion to specify acceptable laboratory analytical methodologies.

Comment: Section 7(a) provides a standard for ground water classified as naturally limited class for reasons other than having a total dissolved solids concentration of three thousand (3,000) milligrams per liter or more, but there apparently is no standard for ground waters having a total dissolved solids greater than three thousand (3,000) milligrams per liter which is a wasteful treatment of these ground waters that are amenable to cleanup and use as drinking water with technology that is currently available as well as technology that might be available in the future. (HEC)

Response: IDEM changed the TDS qualification criterion for a naturally limited classification to ten thousand (10,000) milligrams per liter to recognize EPA's definition of an underground source of drinking water. Additionally, numeric criteria now apply to ground water classified as naturally limited because it has a TDS concentration above ten thousand (10,000) milligrams per liter.

Comment: Sections 7(a)(1) and 7(c)(1) provide situations for naturally limited class ground water in which no contaminant shall be at or above a concentration that poses a threat to human health, but naturally limited class ground water is assumed not to be used as drinking water; therefore, this requirement should be limited to exposure by inhalation or dermal contact. (BPA)

Response: IDEM moved and incorporated the language of 7(a)(1) into the goal of the rule, which says: "The goal of this rule is to maintain and protect the quality of Indiana's ground water to ensure that exposure to the ground water will not pose a threat to human health, any natural resource, or the environment.". IDEM changed the language of 7(c)(1) to allow a numeric criterion to be set using a risk analysis based on "appropriate toxicological data".

Comment: The implied human health risk assessment of section 7(a)(1) should be based on realistic risk assessment exposure pathways known, or likely, to occur at the site. (USS)

Response: IDEM moved and incorporated the language of 7(a)(1) into the goal of the rule which says: "The goal of this rule is to maintain and protect the quality of Indiana's ground water to ensure that exposure to the ground water will not pose a threat to human health, any natural resource, or the environment.". IDEM changed the language of 7(c)(1) to allow a numeric criterion be set using a risk analysis based on "appropriate toxicological data".

Comment: Sections 7(a)(1) and 7(c)(1) should be removed entirely. (ISEG)

Response: IDEM moved and incorporated the language of 7(a)(1) into the goal of the rule which says: “The goal of this rule is to maintain and protect the quality of Indiana’s ground water to ensure that exposure to the ground water will not pose a threat to human health, any natural resource, or the environment.”. IDEM changed the language of 7(c)(1) to allow a numeric criterion to be set using a risk analysis based on “appropriate toxicological data”.

Comment: Section 7(a)(2)(A)(ii) should be modified with the inclusion of “the nearest, reasonably expected scenario of” after “is based on appropriate toxicological data for”. (NSWMA)

Response: The use of appropriate toxicological data takes into account the nearest, reasonably expected point of exposure.

Comment: The term “appropriate toxicological data” should be clearly defined. (INDI)

Response: IDEM believes that the meaning of the term “appropriate toxicological data” is clear to those who routinely complete and evaluate risk assessments.

Comment: Additional clarification is needed to define the basis for a default standard of ten (10) times the drinking water class numeric criteria, as stated in section 7(a)(2)(B), to give understanding as to whether detection at any level relative to either the MCL or a quantifiable health risk level will bring these areas under the jurisdiction of the rule. This issue is a key concern for the level of remediation that may be required during the redevelopment of existing brownfield properties, and it will impact the determination for alternative cleanup standards using risk assessment protocols, and overall, it concerns the integration of the rule with the proposed RISC program. (INDI)

Response: The default standard of ten (10) times the drinking water class numeric criteria is based on agency calculations showing that, generally, the acceptable risk level from dermal exposure to a contaminant is one (1) order of magnitude higher than that from ingestion and inhalation. IDEM believes the most likely exposure to naturally limited class ground water is dermal contact. Additionally the statement: “The standards established in this rule shall allow, as appropriate, ground water remediations to be consistent with the remediation objectives set forth in IC 13-25-5-8.5.” applies to all classes of ground water. Generally, the appropriate remediation program will establish cleanup numbers. IDEM has included language in the rule to help ensure no interference or conflict with those programs’ ability to do so.

Comment: The default standard of ten (10) times the drinking water class numeric criteria, as stated in section 7(a)(2)(B), might be acceptable if the naturally limited class ground water were redefined. (HEC)

Response: IDEM redefined the qualifications and criteria for naturally limited class. The default standard of ten (10) times the drinking water class numeric criteria is based on agency calculations showing that, generally, the acceptable risk level from dermal exposure to a contaminant is one (1) order of magnitude higher than that from ingestion and inhalation. IDEM believes that the most likely exposure to naturally limited class ground water is dermal contact.

Comment: The intent of section 7(c) is reasonable to allow for alternative standards that are less stringent than the drinking water based standards if the site does not support drinking water wells but does have other uses. However, it is not acceptable to require that surface water quality standards must be applied at the ground water—surface water interface. (USS)

Response: IDEM believes that requiring the application of the surface water quality standards at the ground water-surface water interface (for waters of the state) is appropriate, as the numeric criteria established in the ground water quality standards may not be protective of nonhuman species exposed to surface water.

Comment: Sections 7(c)(2) should be reworded to only protect existing uses of ground water. (ISEG)

Response: IDEM believes that protecting both the current and future uses of ground water is appropriate.

Comment: The language of section 7(c)(4) should be reworded to only protect residential drinking water sources rather than all drinking water sources as the draft language states. (IMA, Eli, ISEG)

Response: IDEM believes that protecting all drinking water supplies (current, future, public, and private) is appropriate.

Comment: The rule needs to add an additional subsection to section 7 to specify that there are no numeric criteria that apply to water classified as naturally limited class due to a total dissolved solids concentration of three thousand (3,000) mg/l or more. (ISEG)

Response: The qualifications and criteria for naturally limited classification have been changed. The TDS qualification criterion for a naturally limited class ground water was changed to ten thousand (10,000) milligrams per liter to recognize EPA's definition of an underground source of drinking water. Additionally, numeric criteria now apply to ground water classified as naturally limited because it has a TDS concentration above ten thousand (10,000) milligrams per liter. Also, activity based, automatic qualifications for naturally limited were added to the rule. For example, ground water is automatically classified as naturally limited if it is in the injection zone of a permitted Class I, II, or III injection well. For ground water that automatically qualifies as naturally limited, the narrative criteria in section 5 of the rule apply.

Comment: Ground water quality can vary significantly both horizontally and vertically across or along the location of standards application, and ground water quality can vary seasonally and over time; therefore, the rule should incorporate the principles of volume averaging (averaged in terms of location and time) to determine that an appropriate average concentration exists at the location of standards application for comparison to the numeric criteria. The evaluation methodology should be consistent across all programs. (INDI)

Response: IDEM agrees and anticipates that as an agency establishes how it will implement these standards through rules it will take into consideration natural ground water quality variations.

Comment: The language of section 8 concerning numeric criteria for impacted drinking water class ground water would allow the presence of one pollutant to permit contamination by other pollutants. The development of numeric criteria based on risk assessment should not be used to justify that it is safe to pollute ground water. The language that appears in section 7(b) indicating that the naturally occurring concentrations shall be used as the numeric criterion for a contaminant that is naturally occurring at a concentration greater than the drinking water numeric criterion should be repeated in section 8. (HEC)

Response: IDEM has changed the rule to make it clear that ground water classified as impaired (formerly impacted) is classified as such only for the contaminants that have concentrations above the numeric criteria. Thus, no new contaminant can be added that will increase the concentration of that contaminant above the drinking water class numeric criterion without a reevaluation of the impaired classification requirements. IDEM has designed the impaired class to recognize past contamination and facilitate remediation while still protecting ground water.

Comment: It is appropriate to set standards for impacted drinking water class ground water, as section 8 does, by way of human health risk assessment since criteria to protect human health and the environment is established by section 4(c) and will provide adequate safe guards for the alternative to the drinking water based ground water quality standard. (USS)

Response: IDEM agrees.

Comment: Section 9 concerning the location of standards application provides very good guidance which will be required to delineate classification areas. (BPA, III)

Response: IDEM has refined section 9 and the location of standards application is now captured in the concept of the ground water management zone. IDEM believes that the new language in section 9 further clarifies how, when, and where a ground water management zone is established.

Comment: The location of standards application should be at the boundary of the saturated zone. Using arbitrary surface boundaries as a point of standards application is a prescription for creating more contaminated sites, ruined wells, brownfields, and future ground water contamination events. The rule emphasis should be on preventing contaminants from entering ground water not waiting until contamination occurs before addressing it with a cleanup that may be costly and difficult to achieve. (HEC)

Response: The location of standards application was always meant to be three (3) dimensional in nature. To help clarify this, IDEM changed the rule and replaced the location of standards application with the ground water management zone. The rule defines the ground water management zone as a “three (3) dimensional region”. The preferred approach for establishing a ground water management zone is for an agency to apply pertinent factors to identify a program or site specific zone appropriate for a facility, practice, or activity.

Comment: Section 9 is overly broad in its scope and seems to be in conflict with section 2(a) concerning the five (5) agencies that have applicability under the rule. Section 9(b) is vague

in implication and places vast discretionary powers in the hands of the commissioner. The language of section 9 needs to be more ascertainable. (INDI)

Response: IDEM has changed the rule and replaced the location of standards application with the ground water management zone. The establishment of the ground water management zone is made by the agency with jurisdiction over the facility, practice, or activity.

Comment: The flexibility of section 9 concerning the location of standards application is appropriate; however, it would be simpler and still properly protective of health when considered in the context of other safeguards for human health contained in the draft rule if section 9(b)(2) were modified so that the default location of standard application is the property boundary and not three hundred (300) feet from the contaminant source when the contaminant source is more than three hundred (300) feet from the property boundary. (USS, INDI)

Response: IDEM changed the rule and replaced the location of standards application with the ground water management zone. The preferred approach for establishing a ground water management zone is for an agency to apply pertinent factors to identify a program or site specific zone appropriate for a facility, practice, activity, or ground water contamination assessment or remediation. In the absence of an agency established ground water management zone, the default approach may be used. In the default approach, IDEM believes it is appropriate to try and limit ground water contamination within property lines since ground water migrates and property lines and ownerships change. If an agency does not think the three hundred (300) foot limitation is appropriate for a facility, practice, or activity it regulates, then the rule allows for the establishment of a site specific ground water management zone.

Comment: Section 9(a) concerning the location of standards application should be modified, to be consistent with the amendment proposed to the ground water statute in SEA 83, by rewording “An agency may use . . .” to “An agency shall use . . .” so that the requirements of subsection (b) are mandatory. (IMA, Eli, ICC, ISEG)

Response: With the inclusion of a default approach for establishing a ground water management zone, IDEM believes the development of program or site specific ground water management zones should be left to the discretion of the agency with jurisdiction.

Comment: The site specific factors of section 9(b)(1) should be limited by deleting clauses (A) and (F). (ISEG)

Response: IDEM believes it is appropriate for an agency to consider regulatory program requirements and impacts to any natural resource and the environment when establishing a ground water management zone.

Comment: Section 9(b)(2)(B) should be modified by the placement of “permanent” before “property boundary.” (IMA, Eli, ISEG)

Response: IDEM believes this change would be inappropriate as property boundaries are not always permanent.

Comment: Section 9(b)(2)(B) should be deleted from the rule so as to not create

ambiguity in the default approach to determining the location of standards application. If an agency is concerned with the distance between the contaminant source and the property boundary, it can implement site specific evaluations under section 9(b)(1). (ICC)

Response: IDEM changed the rule and replaced the location of standards application with the ground water management zone. The preferred approach for establishing a ground water management zone is for an agency to apply pertinent factors to identify a program or site specific zone appropriate for a facility, practice, activity, or ground water contamination assessment or remediation. In the absence of an agency established ground water management zone, the default approach may be used. In the default approach, IDEM believes it is appropriate to try and limit ground water contamination within property lines since ground water migrates and property lines and ownerships change. If an agency does not think the three hundred (300) foot limitation is appropriate for a facility, practice, or activity it regulates, then the rule allows for the establishment of a site specific ground water management zone.

Comment: The default approach for location of standards application should not be applied if a site specific showing is made to the agency with responsibility for the site that a different location is more appropriate. (IMA, Beth, Eli)

Response: IDEM changed the rule and replaced the location of standards application with the ground water management zone. The preferred approach for establishing a ground water management zone is for an agency to apply pertinent factors to identify a program or site specific zone appropriate for a facility, practice, activity, or ground water contamination assessment or remediation. The default approach may be used only if an agency decides to use it or in the absence of an agency established ground water management zone.

Comment: The rule should not try to establish implementation strategies that apply to specific activities but should allow the various agencies named in the statute to develop rules in response to the ground water quality standards rule to regulate activities under their authority. (BPA, B&T, USS)

Response: IDEM agrees.

Comment: The rule needs to specify implementation strategies that focus on prevention of contamination to ground water from the following types of activities: (1) Activities that discharge to the subsurface and cause contaminants to enter the aquifer are indicating that “treatment” and attenuation by the subsurface have been inadequate; therefore, ground water standards should apply at the zone of saturation and contain a requirement for cleanup to background levels as an incentive to prevent ground water contamination. (2) Activities that are designed not to discharge do have occasional, unintentional discharges and should, therefore, be treated the same as activities that discharge to the subsurface. (3) Activities addressing historical contamination that occurred as a result of practices that were once considered acceptable should be cleaned up to the maximum contaminant level goal (MCLG) which would be consistent with the ground water protection statute requirement to establish health protection goals. If it is not technically feasible to achieve the MCLG, cleanup to the MCL may be acceptable though the MCLs established by the Safe Drinking Water Act are not sufficiently protective of human health since they were

designed to take cost considerations into account. (4) Activities addressing ground water contamination that has occurred under modern regulatory programs must be held to a higher standard and required to clean up to background levels so that the emphasis of the rule is on prevention of ground water contamination.(HEC)

Response: IDEM agrees it is important for a regulatory program to employ implementation strategies that focus on prevention of contamination to ground water. However, IDEM believes it is appropriate for an individual agency to specify those strategies for the activities it regulates. The rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water.

Comment: Preventative action levels (PALs) should not be included in the rule as they are inconsistent with risk and governing law and would create a bureaucratic regulatory scheme in which the costs of dealing with this level of effort would outweigh any conceivable benefits. (B&T, USS)

Response: IDEM agrees that including preventative action limits in this rule is not appropriate. However, the rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water.

Comment: Development of preventative action standards would likely duplicate existing regulatory authority and very likely exceed the water pollution control board's authority. (USS)

Response: IDEM agrees that including preventative action limits in this rule is not appropriate. However, the rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water.

Comment: PALs, which most likely will be very activity specific and potentially can

change over time, would be most effectively established and used by the appropriate regulatory authority concerned with the specific activity. (BPA, USS)

Response: IDEM agrees.

Comment: PALs are an absolutely essential part of ground water protection and should be invoked when monitoring indicates an increasing trend in concentration data or when the concentration reaches twenty percent (20%) of the enforceable standard. Indiana has contaminated ground water sites all over the state; a rule without a focus on prevention just allows for the creation of more contaminated ground water sites in the future. A ground water standard rule including PALs would be consistent with the ground water protection statute requirement to establish minimum compliance levels for ground water monitoring at regulated facilities. Furthermore, early detection of ground water contamination through the enforcement of PALs would assist in achieving the statutory requirement to ban the discharge of effluents into potable ground water and to establish concentration limits for contaminants in ambient ground water. (HEC)

Response: IDEM agrees that preventative action levels may be a useful tool; however, IDEM believes that requiring preventative action limits in this rule is not appropriate. The rule now says: “An agency shall use its regulatory authority, when adopting rules, to ensure the criteria established in this rule will not be exceeded in ground water. . . . When adopting rules, an agency may . . . apply preventative action levels, design standards, a monitoring framework, or other regulatory methods to ensure that facilities, practices, and activities are designed and managed to eliminate or minimize potential adverse impacts to the existing ground water quality.”. In ensuring that the criteria are met, an agency may employ preventative action levels or other tools it deems adequate to prevent contamination of ground water.

Comment: The draft rule does not address the issue of background ground water quality from non-naturally occurring sources. There have been instances of upgradient sources of contamination resulting in IDEM requesting investigation and remediation efforts; the rule should specify how future instances such as this will be addressed. (INDI)

Response: Language was added in subsections 6(f) and 7(c) to address the issue of background water quality from non-naturally occurring sources when identifying numeric criteria for a facility, practice, or activity.